

Preliminary observations on an undescribed yellow *Pluteus* species

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Abstract

A yellow to olive-yellow *Pluteus* species (Fungi, Agaricales) has been observed on a number of Field Naturalists Club of Victoria Fungi Group forays. It was thought to be *P. lutescens* based on images found in some fungi field guides. Detailed examination of the pileus cuticle (pileipellis) revealed a cutis in transition to a trichoderm with long cylindrical terminal cells. This is inconsistent with *P. lutescens*, which has a hymenoderm layer of almost spherical inflated cells. The characteristics of this *Pluteus* were compared with a number of other species, namely *P. pauperculus* (= *P. lutescens* sensu K. Griffiths), *P. romellii*, *P. chrysophlebius* and the species in *Pluteus* stirps *Leoninus* for which our species seemed to have an affinity. It was concluded that the characteristics did not match any of the species examined, which would suggest that this species is undescribed. (*The Victorian Naturalist* 128(3) 2011, 111-115)

Keywords Pluteaceae, *Pluteus lutescens*, *Pluteus romellii*, *Pluteus leoninus*

Introduction

On a number of Field Naturalists Club of Victoria Fungi Group forays, a yellow to olive-yellow *Pluteus* species (Fig. 1 and front cover) now referred to as *Pluteus* sp. 'yellow', has been observed growing on decaying wood. In Victoria it has been seen at Maits Rest in the Otway Ranges, Bunyip State Forest, Emerald Lake in the Dandenong Ranges and Greens Bush in the Mornington Peninsula National Park. We were also able to confirm, from dried specimens sent to us by Dr Genevieve Gates, that this species is present in Tasmania.

There has been a debate among some of the Club members as to the name of this species. Similar looking species are illustrated in Australian literature as *Pluteus lutescens*, e.g. Fuhrer (2005), McCann (2003) and Griffiths (1985). In overseas literature Arora (1986), Breitenbach and Kränzlin (1995), and Phillips (2006) also illustrate similar looking species such as *Pluteus lutescens*, *Pluteus romellii* and *Pluteus leoninus*. To resolve the problem of the identity of *Pluteus* sp. 'yellow', a detailed examination was made and the results were compared to similar looking known species.

Methods

A number of fruit-bodies of *Pluteus* sp. 'yellow' were collected from various locations. Three fruit-bodies were used to make the microscopic measurements. Mounts for microscopic exami-

nation were made from dried and fresh material, measurements were made in 5% potassium hydroxide solution or in Congo Red with 10% ammonia. The drawings of spores, basidia, and cystidia were made by tracing over digital micrographs in Photoshop™. Some of the material examined has been deposited in the National Herbarium, Royal Botanic Gardens, Melbourne.

Description of *Pluteus* sp. 'yellow'

Pileus to 35 mm broad; when young convex, expanding to plane; surface dry, dull, not hygrophanous, very finely fibrillose or granular, not glabrous, translucent striate towards the margin; colour when very young brown to yellowish brown, becoming dull yellowish to olive-yellow with age.

Lamellae free; moderately close; ventricose, up to 7 mm deep; colour whitish at first, then pale buff, becoming pale pinkish yellow as spores mature.

Stipe centrally attached; generally up to 40 mm long and 3 mm thick; cylindrical, usually with a yellow basal disc, basal mycelium white; surface sometimes smooth, usually covered with white fibrils; colour very pale yellow to lemon yellow for mature and immature fruit-bodies, usually paler at apex.



Fig. 1. View of lamellae of *Pluteus* sp. 'yellow' fruit-body (see also front cover)

Basidiospores 7.0–7.7 × 5.5–6.5 µm, broadly ellipsoidal to subglobose, smooth. **Basidia** four-spored, 22–26 × 9–11 µm, clavate. **Cystidia**: cheilocystidia 55–80 × 16–25 µm, clavate to fusoid-ventricose; pleurocystidia 60–75 × 18–25 µm, fusoid-ventricose, lageniform. **Pileipellis** a cutis with transition to a trichoderm, with long, cylindrical terminal hyphae 100–130 × 21–23 µm (Fig. 2.). The trichoderm hyphae and cystidia are thin-walled (not metuloid). These characteristics suggest that this species should be placed in the *Pluteus* Section *Hispiderma* (Singer 1962; Minnis and Sundberg 2010).

No clamp connections were found.

Discussion

For all the species of *Pluteus* of interest, measurements of the spores, basidia, cheilocystidia and pleurocystidia offer little assistance in identification, because there is little variation between these species, as can be seen in Table 1. The two features that show most variation are the hyphal structure of the pileipellis and the shape of the cystidia (Table 1). These features predominantly were used to separate *Pluteus* sp. 'yellow' from the other species of *Pluteus*.

Pluteus lutescens sensu K. Griffiths (1985)

The illustration of *P. lutescens* in Griffiths (1985: 34) depicts a fruit-body with a brown pileus and a yellow stipe with a distinct red base. The only known *Pluteus* in Australia that matches this description is *P. pauperculus* (Horak 2008) = *P. flammipes* var. *depauperatus* (Horak 1983). This species is restricted to New Zealand and Australia and was initially found in Western Australia.

Pluteus sp. 'yellow' differs from *P. pauperculus*, which can have a bright orange to reddish base to its stipe, and a brown pileus. Its pileipellis is a hymeniderm consisting of clavate and vesiculose cells (Horak 2008), which puts it in the *Pluteus* Section *Celluloderma* (Horak 1983; 2008).

Pluteus romellii (Britzelm.) Sacc.

Synonyms:- *Pluteus lutescens* (Fr.) Bres., and *Pluteus nanus* var. *lutescens* (Fr.) P. Karst.

A description of Australian material is given by Grgurinovic (1997) where it has been given the species name *P. nanus*. Since the description in Grgurinovic (1997) is a direct transcription from Cleland (1934–1935), who called the species *P. nanus* var. *lutescens*, it is reasonable to assume that the description in Grgurinovic (1997) is that of *P. nanus* var. *lutescens*. Grgurinovic expanded upon Cleland's original description by including microscopic details. The description in Grgurinovic (1997) is consistent with *Pluteus romellii*.

Pluteus sp. 'yellow' differs macroscopically from *P. romellii*, which normally has a uniformly brown or olive brown pileus with a glabrous surface towards the margin (Homola 1972; Grgurinovic 1997; Minnis and Sundberg 2010). Microscopically, the pileipellis of *P. romellii* is a hymeniderm composed of pyriform to clavate cells, which puts it in the *Pluteus* Section *Celluloderma*.

Pluteus chrysophlebius (Berk. & Ravenel) Sacc.

Synonyms:- *Pluteus admirabilis* (Peck) Peck, *Pluteus aurantiacus* Murr., *Pluteus melleus* Murr., and *Pluteus rugosidiscus* Murr.

Pluteus sp. 'yellow' differs from *P. chrysophlebius*, the pileipellis of which is a hymeniderm composed of pyriform to clavate cells and therefore belongs in the *Pluteus* Section *Cel-*

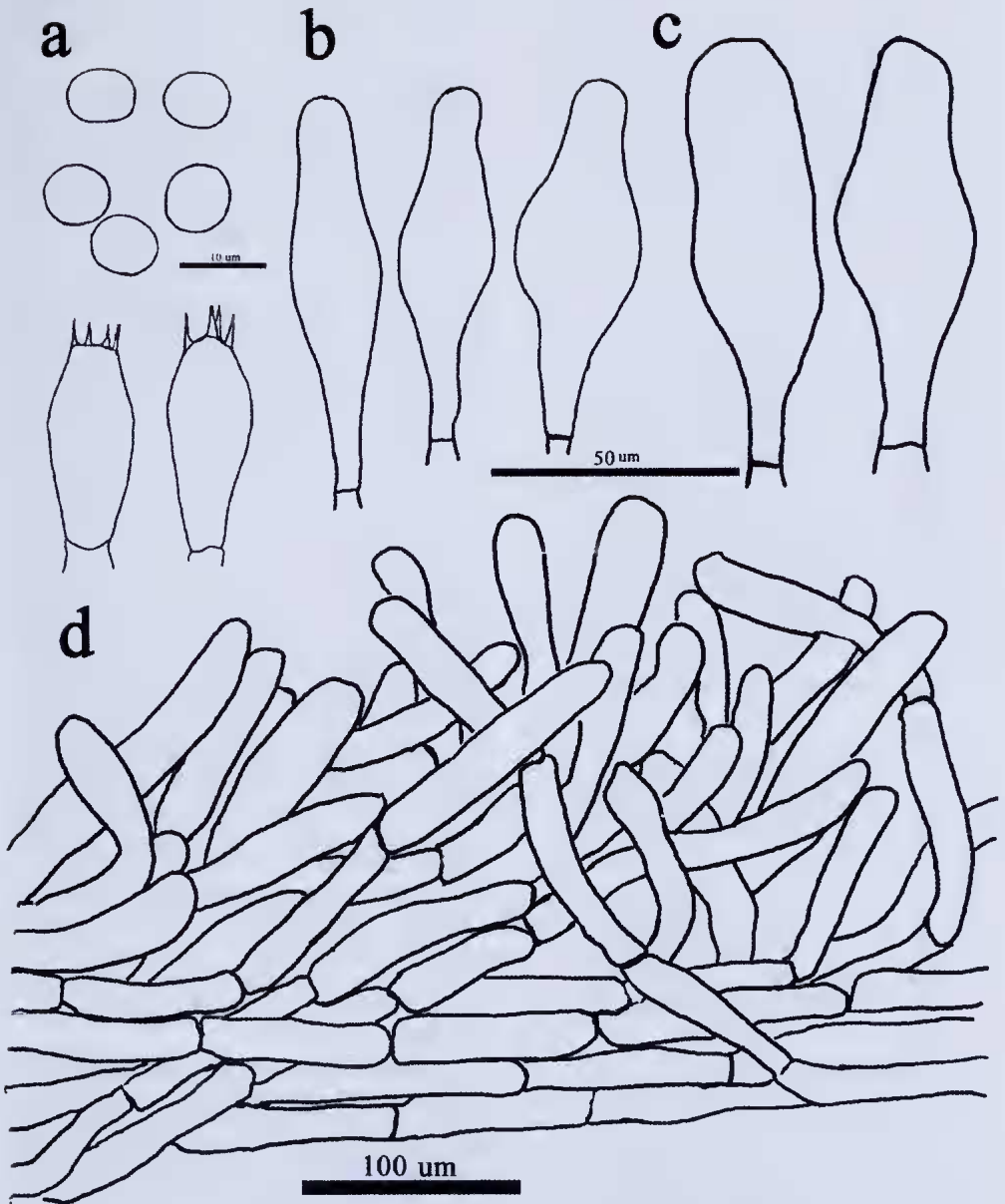


Fig. 2. Microscopic details of *Pluteus* sp. 'yellow'. (a) Spores and basidia. (b) Pleurocystidia. (c) Cheilocystidia. (d) Pileal cells. (a. Scale bar = 10 μm. b, c. Scale bar = 50 μm. d. Scale bar = 100 μm.)

Table 1. Microscopic characteristics and their size in micrometres. (1) Homola 1972, (2) Minnis and Sundberg 2010, (3) Grigarinovic 1997, (4) Breitenbach and Kränzlin 1995, (5) Horak 2008.

	Spores µm	Basidia µm	Cheilocystidia µm	Pleurocystidia µm	Pileipellis cells µm
<i>Pluteus</i> sp. 'yellow'	7.0–7.7 × 5.5–6.5	22–26 × 9–11	55–80 × 16–25	60–75 × 18–25	100–130 × 21–23
<i>Pluteus romellii</i> (1)	5.8–7.0 × 5–6.1	18–20 × 7–9	31–60 × 9–26	48–74 × 14–49	23–62 × 17–52
<i>Pluteus romellii</i> (2)	6.2–7.9 × 4.8–6.6	22–29 × 7–9	23–61 × 12–36	52–62 × 14–30	20–61 × 15–40
<i>Pluteus romellii</i> (3)	6.2–8 × 5.6–7.1	23–34 × 7–11	22.8–68 × 17–47	34–96 × 17–51	22–48 × 10–30
<i>Pluteus chrysophlebius</i> (1)	6.0–7.0 × 4.5–5.8	20–24 × 7–8	30–46 × 10–23	40–60 × 12–18	18–29 × 11–19
<i>Pluteus chrysophlebius</i> (2)	3–7.9 × 4.8–7.0	20–32 × 6–11	24–41 × 13–18	44–67 × 12–22	23–42 × 12–42
<i>Pluteus leoninus</i> (4)	6.5–8.1 × 4.8–6.7	20–37 × 7–10	2.5–55 × 9–15	35–80 × 12–22	90–300 × 12–30
<i>Pluteus pauperculus</i> (5)	5.5–6.5 × 4.5–5.5	20–30 × 6–9	30–80 × 12–17	50–80 × 17–35	35–50 × 15–30

luloderma (Singer 1958; Homola 1972; Breitenbach and Kränzlin 1995; Minnis and Sundberg 2010).

Pluteus leoninus (Schaeff. ex Fr.) Quél.

Pluteus sp. 'yellow' differs from *P. leoninus*, which has a white stipe when immature, and a trichodermal pileipellis composed of large fusiform cells with subacute to acute apices (Singer 1956; Breitenbach and Kränzlin 1995).

The morphological characteristics of *Pluteus* sp. 'yellow' suggest that it has an affinity with *P. leoninus* and that it can be placed with *Pluteus* species in Section *Hispidoderma* stirps *Leoninus* as defined by Singer (1962: 442). This Section consists of approximately ten species, which have a pileus and/or stipe coloured red, yellow, orange, bronze, etc. A cursory examination of the species in this Section shows that *P. leoninus* (= *P. luteomarginatus*, = *P. sororiatus*, see Justo and Castro 2004), and *P. longipes* (= *P. whiteae*, see Singer 1959), *P. roseipes*, and *P. glabrescens* differ from *Pluteus* sp. 'yellow' because their pileipelli consist of large fusiform cells with subacute to acute apices (Singer 1956, 1959). *Pluteus flavofuliginus* differs from *Pluteus* sp. 'yellow' by having cystidia with tiny nodulose or sterigmatoid appendages (Singer 1956). *Pluteus conizatus* differs from *Pluteus* sp. 'yellow' by having smooth (no prongs) metuloid cystidia (Singer 1956). *Pluteus rubrotomentosus* differs from *Pluteus* sp. 'yellow' by having a red pileus (Singer 1958). *Pluteus glyphidatus* differs from *Pluteus* sp. 'yellow' by having differently shaped pileipellis hyphae (Singer 1956), and *P. citrinus* differs by having smaller spores, lacks a striate margin, and has a cream coloured stipe (Murrill 1941; Singer 1956).

It is clear that *Pluteus* sp. 'yellow' is neither *P. lutescens* sensu K. Griffiths, nor *P. romellii*, nor *P. chrysophlebius* because of the differences outlined above. *Pluteus* sp. 'yellow' seems to have some affinity to the species in *Pluteus* stirps *Leoninus*, but because of the differences mentioned above it can be concluded that it is not one of those species. Since it has not been possible to identify *Pluteus* sp. 'yellow' by comparing it with most of the likely known species, it is probable that *Pluteus* sp. 'yellow' is an unnamed species.

Conclusion

From this preliminary examination of *Pluteus* sp. 'yellow' it is evident that it is not *P. lutescens* sensu K. Griffiths, nor *P. romellii*, nor *P. chrysophlebius*, nor any of the species in *Pluteus* stirps *Leoninus*. It is most probable that *Pluteus* sp. 'yellow' is an undescribed species. Therefore it is suggested that the field name *Pluteus* sp. 'yellow' be given to this species until it is officially named.

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One hundred and one years ago

A NEW FORM OF VEGETABLE CATERPILLAR (?)

By. D. McALPINE, Government Vegetable Pathologist

(From 'The Romance of plant pathology' (Read before the Field Naturalists' Club of Victoria, 8th August, 1910)

A distinguished entomologist in a neighbouring State sent me specimens of what he called a new form of Cordyceps. Accompanying the specimens there was the following description:— "The lepidopterous caterpillars (Agrotis or other Noctuid) are under an inch; the stalk whitish, less than a millimetre at base, and gradually attenuated to about .2 mm. or less, the dark stroma short and thread-like. No indication of branching, though *Cordyceps hawkesii* appears to be the only one comparable in form."

Now, the recipe given in Mrs. Glasse's cookery book for the preparation of jugged hare is very appropriate here—"First catch your hare"; and before attempting to name or describe a fungus, it is well to make sure that there is one. As a matter of fact, the specimen was the rat-tailed larva of the drone or bee-fly (*Eristalis tenax*), which is figured in Froggatt's "Australian Insects," and the larvae are described as "dirty-white maggots, with slender rat-tails at the tip of the body, and they live in all kinds of rotten or semi-liquid refuse." Instead of being a Cordyceps, it was simply a natural appendage, and this pardonable mistake is only another illustration of the necessity for careful examination before jumping at conclusions.

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